

The Law and Facts of the Arkema Case

Arkema Crosby Plant and Hurricane Harvey

Arkema's Crosby, Texas plant produces organic peroxides, many of which must be kept at low temperature, and the plant therefore has multiple refrigerated warehouses and back-up refrigeration systems to ensure safe storage. Arkema has used this chemistry for around 90 years and has many well-defined procedures that have successfully kept products cold through every other storm to hit Houston since the plant was built in the 1960s.



In late-August 2017, Hurricane Harvey caused unexpected and unprecedented conditions that challenged the preparedness of Harris County and the Arkema Crosby plant alike. Arkema took the precaution to shutter its operations as the hurricane approached, and Arkema was prepared for a 100-year and even a 500-year flood. Arkema employees, including plant manager Leslie Comardelle, engaged in super-human efforts to maintain safety as unprecedented flood levels overwhelmed the facility. Ultimately, the cold-temperature organic peroxides stored at Arkema combusted. More than

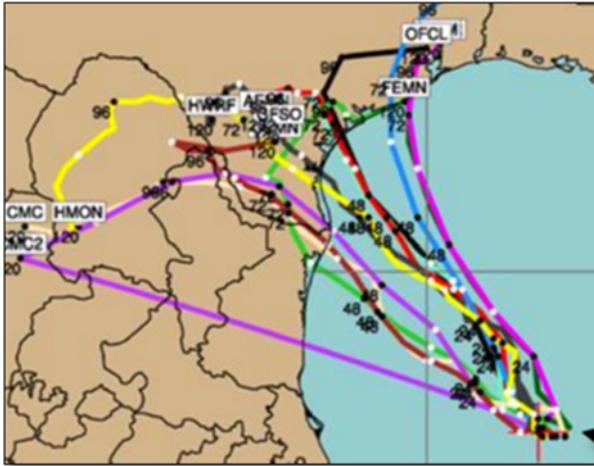
a day and a half before this happened, the company had notified authorities that fires would take place, and that anyone potentially exposed should wear proper protective equipment. As a result, authorities imposed a mandatory evacuation zone in the area.

'Acts of God' and the Texas Water Code

A violation of the Texas Water Code is excused if the violation was caused by "an act of God...or other catastrophe" (§ 7.251 of the statute). Texas courts that have explored the Act of God Defense have concluded that unanticipated events, unprecedented events, and events of an extraordinary nature, including hurricanes and unprecedented floods, are **Acts of God that provide a complete defense** to charges of liability under the Water Code.

If Hurricane Harvey does not qualify as an Act of God as contemplated by § 7.251, it is hard to imagine what would. This hurricane created the single greatest rainfall event in U.S. history. Harris County Flood Control District reported that about one trillion gallons of water fell on Harris County over four days, and that "the rainfall amounts and spatial coverage of those amounts have never been experienced across the United States since reliable records have been kept." Harris County also concluded that the rainfall at the Crosby plant was so extreme it would be likely to occur only once every 5,000 to 20,000 years.

In the days before Hurricane Harvey devastated Harris County, its potential impact was extremely unclear. Rainfall and storm track forecasts changed constantly. Only five days before landfall, the National Hurricane Center (NHC) assessed Harvey as “disorganized showers and thunderstorms” and said “interests in northern Nicaragua, Honduras, Belize, and the Yucatan peninsula should monitor the progress of this system.” Texas was not mentioned until three days before landfall, when the worst impacts were expected hundreds of miles from Crosby.



On the afternoon of August 24, the Houston-Galveston NWS stated that the greatest risk of flooding locally would be “for areas along and south of a Columbus to Houston line.” Crosby is not within this area. Even the most astute

follower of these forecasts would not have been able to predict how Hurricane Harvey would impact the Arkema plant and overpower the best laid plans of many people and agencies.

The astonishing impact was captured in an NWS Tweet on August 27, 2017, stating, “***This event is unprecedented & all impacts are unknown & beyond anything experienced.***” Later that day, statements from officials were dire. The Houston Police Department Tweeted at 6:52pm, “Anyone with a boat who can volunteer please call 713-881-3100.” County Judge Ed Emmett told the community, “We’ve requested boats...but they can’t get here.” Around then, Arkema’s Crosby plant received 23 inches of rain in less than 24 hours, and would get more than 37 inches in four days - more than it had ever received in Arkema’s time there.

Criminal Recklessness

Section 7.182 of the Water Code provides that, “A person commits an offense if the person *recklessly*, with respect to the person’s conduct, emits an air contaminant that places another person in imminent danger of death or serious bodily injury...” Though the Act of God defense alone is enough to negate criminal liability, the definition of criminally reckless conduct (§ 6.03 of the Texas Penal Code) also exonerates Arkema from charges of recklessness:

*A person acts recklessly, or is reckless, with respect to circumstances surrounding his conduct or the result of his conduct **when he is aware of but consciously disregards a substantial and unjustifiable risk** that the circumstances exist or the result will occur. The risk must be of such a nature and degree that its disregard constitutes a gross deviation from the standard of care that an ordinary person would exercise under all the circumstances as viewed from the actor's standpoint.*

The Texas Court of Criminal Appeals held in 2007 that “Recklessness requires the defendant to actually foresee the risk involved and to consciously decide to ignore it.” In terms of what it means for a defendant to “actually foresee the risk,” the Texas Court of Criminal Appeals instructs an examination of “events and circumstances **from the viewpoint of the defendant at the time the events occurred**, not viewing the matter in hindsight.”

Arkema was not reckless. To the contrary, Arkema had a written Hurricane Preparedness Plan detailing measures for protecting people and property before, during, and after a hurricane. Arkema had an Emergency Response Plan addressing contingencies like loss of power and severe weather events. Arkema had Storage Building Safety Guidelines, updated in 2016, directing employees to put low-temperature products in refrigerated trailers if warehouses lost power and other contingency measures did not work. In short, **Arkema did not consciously disregard or ignore the risk** that hurricanes and other emergencies could present to safe product storage. Arkema acknowledged and planned for these risks, and on this basis alone, the recklessness inquiry should end.

Part of Arkema's site is in the 100-year flood plain, and the rest is in the 500-year flood plain. Arkema knew its plans and safeguards were sufficient to withstand a 100-year or 500-year flood event, as it had weathered many storms without loss of power, including benchmark events in 1994 and 2015. The sufficiency of Arkema's plans for storm events has also been independently verified by its insurers. One of these, FM Global, had asked Arkema to develop an emergency response plan that addressed floods, a request Arkema satisfied in September 2016. Arkema's lead insurer then, Allianz, also concluded Arkema had an emergency response plan that addressed floods.

The U.S. Chemical Safety Board's Conclusions

On May 24, 2018, the U.S. Chemical Safety and Hazard Investigation Board (CSB) issued a report and video animation following an eight-month long investigation, in which Arkema fully cooperated. The CSB report and video are publicly available at the links below:

<https://www.youtube.com/watch?v=jtWYBMwRt-A&t=369s>
<https://www.csb.gov/arkema-inc-chemical-plant-fire/>

The CSB found that "the Crosby facility appears to have had sufficient safeguards in place to prevent loss of refrigeration in the Low Temperature Warehouses for a 100-year flooding event." The CSB made similar findings on Arkema's readiness for a 500-year flooding event. In addition, the CSB recognized that during Harvey, Arkema implemented its plan for using refrigerated trailers in emergency situations, and that this was an additional layer of protection for keeping products cold. Put another way, ***an independent federal government investigative agency has already concluded that Arkema had sufficient plans in place for the flood plains on which its facility was situated.***

The CSB also analyzed whether Arkema could have improved its plans based on industry guidance that was in place before Hurricane Harvey. The CSB concluded that existing flood regulations and flood planning guidance did not anticipate Harvey-level flooding and was not enough to have prevented the incident at Crosby.

Arkema's Preparation and Response

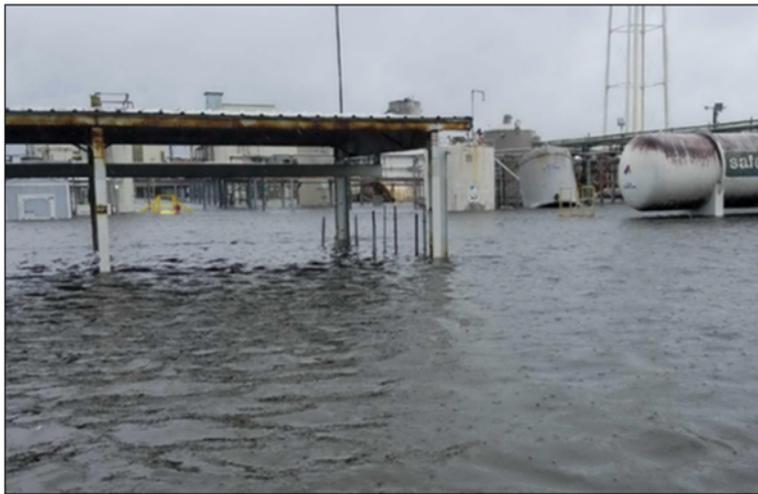
The CSB also made extensive factual findings about what Arkema did to prepare for and handle Hurricane Harvey. They report that at the start of the 2017 hurricane season, as it does every year, Arkema's hurricane preparedness team began meeting and monitoring storms. On August 24, when remnants of Tropical Storm Harvey re-formed, Arkema personnel began to ready the plant for possible hurricane impact.

The indictment says it was reckless that Arkema failed to move product offsite before landfall. Yet notably, the CSB report did not conclude that Arkema should have done so. Anyone who remembers the traffic nightmares that caused 70 deaths during Hurricane Rita would not want chemicals on public roads during a natural disaster. Chemicals are safest when kept at a permanent location, protected by built-in safeguards and managed by trained workers.

As Harvey approached, Arkema activated its ride-out-crew, a team assigned to stay on-site and maintain safety for the duration of a hurricane. The team anticipated that a storm dumping even 10 inches more rain than was then forecasted would generate one to two feet of floodwater. That might make it difficult to access the facility, but it would not have impacted the plant's redundant safety systems.

Arkema completely halted production by Friday, August 25, 2017. Plant personnel continued hurricane preparations, securing loose materials, elevating portable equipment, bringing fuel and storm equipment on-site, staging equipment, and ensuring readiness of contingency systems. The crew also reviewed storm scenarios and corrective actions, and substantially reduced the level in waste water treatment equipment.

In the coming days, the ride-out crew fought torrential rain and rising floodwater. As floodwaters approached electrical transformers, the ride-out crew proactively cut power to



some warehouses, and eventually to all but one warehouse, to avoid electrocution risk. Each time, per Arkema's written protocol, they moved cold storage products to other refrigerated warehouses and to refrigerated trailers. Still, flood levels continued to surge, and eventually encroached on the site's main power transformers. Finally, anticipating that floodwater would cause loss of all power, the crew moved all products from the cold storage warehouse still powered by a

backup generator into refrigerated trailers. As reported by the CSB, throughout this time the ride-out crew did not believe the water would continue to rise.

Following Arkema's written emergency protocol, the crew was moving the refrigerated trailers to higher ground when flooding also disabled the heavy equipment used to move the trailers. Much of the remaining peroxide product had to be stacked in the refrigerated trailers by hand. Ultimately, the plant's freezer buildings lost power, the plant's main power transformers flooded and failed, the plant's backup generators flooded and failed, the plant's liquid nitrogen backup system flooded and failed, and the plant lost all power.

By daylight on August 29, the crew had finished moving the remaining cold storage product through chest-deep water into nine refrigerated trailers. Although they had taken every measure available to keep products refrigerated, they ultimately were not able to do so. Still, as a direct result of their efforts, with the exception of a forklift parked by the trailers, fire consumed only the products and refrigerated trailers. When the ride-out crew was forced to evacuate the plant by boat, portions of the site were inundated with more than seven feet of floodwater.

Conclusion

Our criminal law is designed to charge and punish people who cross clear lines of misconduct. The law of criminal recklessness captures such conduct in appropriate cases where people consciously disregard or ignore known substantial and unjustifiable risks. It is simply unfathomable that the concept of “criminal recklessness” could be applied to the facts in this case. This is especially true when the evidence shows that a company and its employees acknowledged risks presented by the business in which they are involved and the place they have chosen to conduct it, had safeguards and procedures in place to address those risks, and followed those procedures. Plant personnel worked tirelessly to reckon with a storm and its floodwaters that upended the best laid plans of so many.

Arkema did not commit a crime in creating, implementing, and following plans that were based on the risks it foresaw in August 2017. None of the experts foresaw the risks of Harvey and neither did Arkema nor any of its employees who so tirelessly and heroically tried to cope with its unprecedented destruction.